

REMARKS

By the foregoing Amendment, Claims 1, 8 and 16 have been amended. Claims 1 and 16 have been amended to correct a lack of antecedent basis for the term “glass.” The term “glass” is now properly introduced in dependent claims 8 and 20. A marked up version showing the changes made is attached. Favorable reconsideration of the application is respectfully requested.

Claims 1, 3, 8-10, 13, 16, 20 and 21 were rejected under 35 U.S.C. 103(a) on the grounds of obviousness from Broussard. The Examiner contended that Broussard discloses a one-piece cup-shaped connector shell (12) with an outer radial connector flange, an insulating plug (14) made of glass, a plurality of tubular risers (tubular elements) extending from the body 22 in a direction of the first end, and a plurality of connector pins 62.

Claim 1 recites “an insulating plug mounted in the first end of said cup-shaped connector shell; a plurality of tubular risers mounted to said insulating plug at said first end of said connector shell, each having a portion extending from said first end of said connector shell.” Claim 16 similarly recites “an insulating plug mounted in the first end of said cup-shaped connector shell; a plurality of tubular risers mounted to said insulating plug at said first end of said connector shell and each having a portion extending from said first end of said connector shell.” The Examiner argued that although Broussard did not disclose a portion of the plurality of tubular risers extending from the first end of the

shell, it would have been obvious to locate the tubular risers extending from the first end of the shell as a rearrangement of parts, citing *In re Japikse*, 86 USPQ 70.

The Examiner referred to tubular elements extending from the body 22 in a direction of the first end, as can be seen in Fig. 6 of Broussard, as tubular risers. These elements are not otherwise identified or described in Broussard, so that it is respectfully submitted that Broussard does not teach or disclose a plurality of tubular risers mounted to the insulating plug at the first end of the connector shell and having a portion extending from the first end of the connector shell.

Further, it appears from Fig. 6 of Broussard that these tubular elements are part of the pin connection block 22, which is shown as spaced apart from the external coupling sleeve 12 in Fig. 6. The block 22 therefore does not correspond to the “insulating plug” recited in claim 1, and the tubular elements of block 22 are not mounted to an insulating plug at the first end of the connector shell, as is recited in Claim 1. The Examiner identified the polymeric body 14 as the insulating plug, and it is clear from Fig. 6 that the tubular elements extending from block 22 are not mounted to the polymeric body 14 at the first end of the connector shell.

From Fig. 6 of Broussard, it can be seen that other “tubular elements” that could have been referred to by the Examiner as tubular risers are elements 34, described in Broussard at col. 3, line 60 as “pin connection sockets.” The pin connection sockets 34 of Broussard therefore correspond to the solder cup 52 of the portion 50 of the connector pin of the present invention, as described in the specification at page 5, lines 16-19, and shown in Figs. 2 and 3. The Examiner referred to a plurality of connector pins (62) but

these appear to be the connector pins 30, 32, described in Broussard, for example at col. 3, lines 37-38. It is therefore clear that these pin connection sockets of Broussard also do not correspond to tubular risers as claimed, and that Broussard does not disclose, teach or suggest a plurality of tubular risers mounted to the insulating plug at the first end of the connector shell.

It is therefore respectfully submitted that it would not be obvious from Broussard to have located tubular risers extending from the first end of the shell as a rearrangement of parts, since Broussard does not disclose such a plurality of tubular risers mounted to the insulating plug at the first end of the connector shell in the first place.

Further, In re Japikse, cited by the Examiner, is mentioned in MPEP 2144.04 in connection with patentability considerations based upon legal precedent relating to rearrangement of parts. It was held in that case that claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were unpatentable because shifting the position of the starting switch would not have modified the operation of the device. It was held in that case that there would be no invention in shifting the starting switch disclosed in the prior art to a different position, since that would not modify the operation of the device.

However, as is described in the specification at page 1 line 12 to page 2 line 3, according to FAA Airworthiness Directive (AD 97-03-17), electrical arcing occurred on JAL 747 aircraft, resulting from formation of a conductive layer between potting of the connector and electrical insulation glass of the connector, providing an electrical path for arcing which was severe enough to burn through the connector shell, allowing fuel to

leak. In that case the potting of the connector contributed to the severity of the arcing by allowing contamination to become trapped in the connector. It is respectfully submitted that even if the placement of a plurality of tubular risers mounted to the insulating plug at the first end of the connector shell and having a portion extending from the first end of the connector shell can be considered to amount to a rearrangement of parts from the prior art, this arrangement is significant in overcoming the problems of the arcing and fuel leakage of the prior art. It is further submitted that FAA Airworthiness Directive (AD 97-03-17) demonstrates that this arcing and fuel leakage was a longstanding problem, so that the present invention as claimed would not have been obvious from the prior art. It is therefore respectfully submitted that Claims 1, 3, 8-10, 13, 16, 20 and 21 are inventive and novel over Broussard, and that the rejection of Claims 1, 3, 8-10, 13, 16, 20 and 21 on the grounds of obviousness from Broussard should be withdrawn.

Claims 1-8, 11, 12, 16-20 and 22 were rejected under 35 U.S.C. 103(a) on the grounds of obviousness from the admitted prior art in view of Beinhaur et al. The Examiner indicated that the admitted prior art discloses "a plurality of tubular risers (tubular elements extending from a body 22 in a direction of the first end)" and at the same time indicated that the admitted prior does not disclose tubular risers. It is respectfully submitted that the admitted prior art, shown in Fig. 1, does not disclose a plurality of tubular risers extending from a body 22 in a direction of the first end. The element 22 shown in Fig. 1 is identified in the specification at page 1, line 9 as potting, and no tubular risers are described or shown in Fig. 1.

The Examiner indicated that Beinhaur et al. discloses tubular risers (48).

However, the element 48 shown in Figs. 3 and 4 of Beinhaur et al. is described as an annular rib. The annular rib 48 is located on a flange 46, which is described at col. 6, lines 10-13 as "a cylindrical housing portion or flange 46 extending rearwardly from wire face 44 to facilitate eventual process steps and to assure appropriate sealing." In Beinhaur et al., the flange 46 extends from a wire face 44 of a dielectric housing 40 within a shell 42. However, Beinhaur et al. does not disclose, teach or suggest tubular risers extending from an end of the connector shell, as is claimed. Claim 1 recites "an insulating plug mounted in the first end of said cup-shaped connector shell; a plurality of tubular risers mounted to said insulating plug at said first end of said connector shell, each having a portion extending from said first end of said connector shell." Claim 16 similarly recites "an insulating plug mounted in the first end of said cup-shaped connector shell; a plurality of tubular risers mounted to said insulating plug at said first end of said connector shell and each having a portion extending from said first end of said connector shell." It is therefore respectfully submitted that Claims 1-8, 11, 12, 16-20 and 22 are inventive and novel over the admitted prior art and Beinhaur et al., and that the rejection of Claims 1-8, 11, 12, 16-20 and 22 on the grounds of obviousness from the admitted prior art in view of Beinhaur et al. should be withdrawn.

It is further respectfully submitted that Beinhaur teaches that it is necessary to provide sealant preforms 56, 58 within heat recoverable tubing, so that the sealant preforms will seal over the flange 46 of a terminal and the insulated wire end portion 74. However, the construction of the present invention does not depend upon seals at the

interface between the wire and heat shrunk tubing, and does not depend upon seals at the interface between the risers and the heat shrunk tubing. It is respectfully submitted that the construction of the invention advantageously provides a high resistance along a current leakage path between adjacent electrodes, making any arcing between the spaced apart electrodes improbable in a fuel-air mixture environment, without depending upon sealant preforms as is disclosed in Beinhaur.

In light of the foregoing, it is respectfully submitted that the application is in a condition for allowance. An early favorable action is respectfully solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) An electrical connector for aircraft fuel pumps, comprising:
 - a cup-shaped connector shell, having opposing first and second ends, the first end being closed and the second end being open, and an outer radial connector flange at the first end;
 - an insulating plug mounted in the first end of said cup-shaped connector shell;
 - a plurality of tubular risers mounted to said [glass] insulating plug at said first end of said connector shell, each having a portion extending from said first end of said connector shell;
 - a plurality of connector pins mounted in said insulating plug and extending longitudinally through corresponding ones of said plurality of tubular risers, through said connector shell, and each having a portion extending from said corresponding tubular risers at the first end of said connector shell; and
 - a plurality of electrical cables connected to corresponding ones of said plurality of connector pins, respectively.

8. (Amended) The electrical connector of Claim 1, wherein said insulating plug is formed of glass and forms a hermetic seal of the first end of said cup-shaped connector shell.

16. (Amended) An electrical connector for aircraft fuel pumps, comprising:

a unitary cup-shaped connector shell, having opposing first and second ends, the first end being closed and the second end being open, and an outer radial connector flange at the first end;

an insulating plug mounted in the first end of said cup-shaped connector shell;

a plurality of tubular risers mounted to said [glass] insulating plug at said first end of said connector shell and each having a portion extending from said first end of said connector shell;

a plurality of connector pins mounted in said insulating plug and extending longitudinally through corresponding ones of said plurality of tubular risers, through said connector shell, and each having a portion extending from said corresponding tubular risers at the first end of said connector shell;

a plurality of electrical cables connected to corresponding ones of said plurality of connector pins, respectively.